

JAPAN

EDICT OF GOVERNMENT

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JIS B 9223 (1989) (English): Format of specification for agricultural wailing tractors

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

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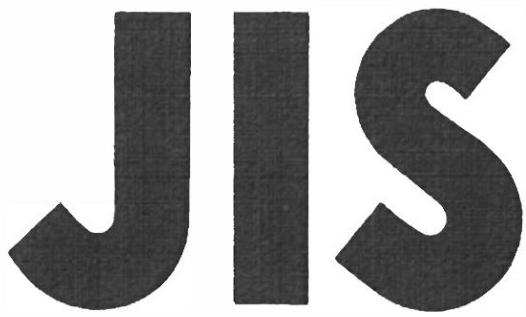


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JAPANESE INDUSTRIAL STANDARD

**Format of Specification for
Agricultural Walking Tractors**

JIS B 9223⁻¹⁹⁸⁹

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

J I S

Format of Specification for Agricultural
Walking Tractors

B 9223-1989

1. Scope

This Japanese Industrial Standard specifies the format of specification for agricultural walking tractors (hereafter referred to as "specification") and the method of entry in the format.

Remarks 1. An agricultural walking tractor (hereafter referred to as "walking tractor") means an agricultural machine with one or two wheels, which is connected with a working machine mainly for plowing or soil preparation (hereafter referred to as "working machine") and drives or hauls the working machine through the control by a walking operator.

Agricultural walking machines include agricultural machines which have no wheels but perform work with a working machine connected at its part equivalent to a wheel axle.

2. The units shown in { } in this standard are based on the conventional units and are appended for informative reference.

Applicable Standards

JIS B 8012-Small Size Water Cooled Diesel Engines for Land Use

JIS B 8017-Performance Test Method of Small Size Air Cooled Gasoline Engines for Land Use

JIS B 8018-Test Method of Performance of Small Size Diesel Engines for Land Use

JIS B 9209-Dimensions of Hitch for Walking Tractors

JIS Z 8401-Rules for Rounding off of Numerical Values

2. Definition

The term used in this Standard means as follows:

standard working order condition The standard working order condition means as follows:

- (1) The condition of a walking tractor carrying specified quantities of fuel, lubricating oil, cooling water, battery electrolyte, and the like so as to enable the tractor to operate normally.
- (2) The condition in which the adjustable structural parts, if provided, are adjusted to the standard values where the condition of adjustment influences the values written in the specification of the walking tractor.

3. Conditions for Preparation of Specification of Walking Tractor

The conditions for preparation of specifications of walking tractors shall be as specified in Figs. 1 and 2 and Table according to the construction of walking tractors.

Fig. 1. Condition with Working Machine Detached

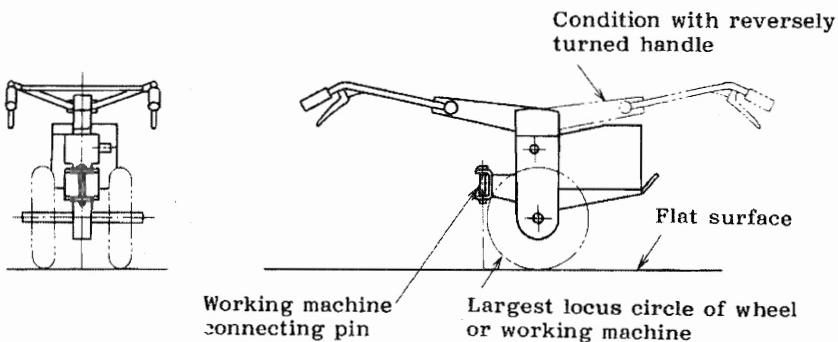


Fig. 2. Condition with Rotary Attached

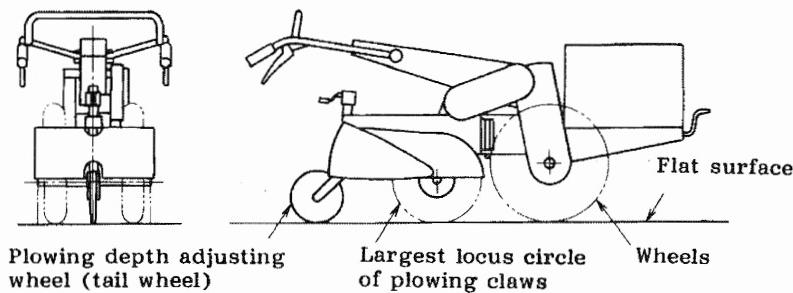


Table 1. Conditions for Preparation of Specification

Condition	1	2
Construction of walking tractor	<p>(1) Construction capable of being attached with various kinds of working machines for carrying out various works.</p> <p>(2) Construction not included in condition No. 2.</p>	<p>(1) Construction always attached with a rotary to exclusively perform plowing operation.</p> <p>(2) Construction attached with a rotary almost fixedly mainly to perform plowing operation but capable of being attached with other working machines than the rotary.</p> <p>(3) Construction attached with a rotary in the front part.</p>
Conditions of machine body	<p>(1) Standard working order condition.</p> <p>(2) Condition with working machine detached The condition of the walking tractor with the working machine detached, placed on a horizontal and flat place (hereafter referred to as "flat surface"), and with the working machine connecting pin of the main working machine connecting hitch (hereafter referred to as "hitch") directed vertically to the flat surface. However, for a walking tractor without wheels, the condition of the tractor connected with the standard working machine at its part equivalent to a wheel axle. In such a case, the connected working machine is regarded as the wheel.</p>	<p>(1) Standard working order condition</p> <p>(2) Condition attached with a rotary Condition in which the tractor is placed on a flat surface with the standard rotary, standard wheels, and standard accessories (standard additional weight, etc.) attached and in which the largest locus circle of the plowing claws of the rotary and the plowing depth adjusting wheel of the rotary (hereafter referred to as "tail wheel") are kept in contact with the flat surface.</p> <p>(3) The condition with the rotary attached is as shown in Fig. 2.</p>

Table 1 (Continued)

Condition	1	2
Conditions of machine body	<ul style="list-style-type: none"> (3) Where the working machine is detached, no unnecessary accessories (such as an additional weight) are attached. (4) In a construction allowing the use of the handle by turning it forward and backward, the handle position shown by continuous lines in Fig. 1 is taken as the standard position. (5) The condition with the working machine detached is as shown in Fig. 1. 	

4. Format of Specification

The format of specification shall be as shown in Attached Table as a rule, but alteration, addition, etc. of writing items are permissible according to the use of the specification.

Further, where required, the construction of respective parts, materials, testing methods, etc. shall be added and a full view, diagrams relating to working machine connection, and the like shall be appended.

5. Gist of Writing in Specification

The gist of writing in the specification shall be as follows:

(1) Common Matters

(1.1) Values Written in Specification

- (a) Design values shall be written as a rule.
- (b) Unless otherwise specified, the calculated values rounded off to integers in accordance with JIS Z 8401 shall be written.
- (1.2) Unapplied parts of the specification items shall be filled with "none" or "—" (hyphen).

(2) Overall Specification

- (2.1) Manufacturer's Name The name of the manufacturer of the walking tractor shall be written.

- (2.2) Designation and Type The designation, type, etc. of the walking tractor shall be written.
- (2.3) Conditions for Preparation of Specification The condition number shown in Table 1 shall be written to clarify the contents of the specifications.
- (2.4) Total Length The overall length of the walking tractor shall be written together with its position.
- (2.5) Total Width The largest width of the walking tractor as the whole shall be written together with its position.
- (2.6) Total Height
 - (a) Total Height in Standard Condition The height measured from the flat surface to the highest part of the walking tractor shall be written together with its position.
 - (b) Total Height in Condition with Protruding Parts Detached The height from the flat surface to the highest part of the walking tractor in the condition in which adjustable and easily attachable and detachable protruding parts, such as back mirrors, are detached shall be written together with its position.
- (2.7) Tread The standard, largest, and smallest wheel distance (center distance between wheels) on the surface of contact of the left and right wheels with the ground and the number of adjustment steps shall be written.
- (2.8) Ground Clearance The height from the flat surface to the lowest part of the main structure in the vicinity of about the center line of the walking tractor shall be written together with its position.
- (2.9) Handle Position The horizontal distance from the center of the wheel axle to the rear end of the handle shall be written.
- (2.10) Total Mass The total mass of the walking tractor shall be written.
- (2.11) Additional Weights The standard, largest, and smallest additional masses and the positions of their addition shall be written.

(3) Engine Specification

- (3.1) Manufacturer's Name The name of the manufacturer of the engine shall be written.
- (3.2) Designation and Type The designation, type, and the like of the engine shall be written.
- (3.3) Main Elements
 - (a) The kind of engine, number of cycles, type of combustion chamber, number of cylinders, cylinder arrangement, valve arrangement, ignition system, etc. shall be written.

- (b) Total stroke volume (overall displacement) The value calculated from the following formula shall be written to three places of decimals.

$$V = \frac{\pi}{4} \times D^2 L N \times 10^{-6}$$

where, V : total stroke volume (l)

D : cylinder inner diameter (mm)

L : stroke (mm)

N : number of cylinders

π : 3.1416

- (c) The cooling system, starting system, voltage and capacity of the battery, kind of fuel, etc. shall be written.

- (d) The fuel tank capacity shall be written to one place of decimals.

(3.4) Performance

- (a) As a rule, the performance values under the standard atmospheric conditions for testing specified in JIS B 8012, JIS B 8017, or JIS B 8018 shall be written.

- (b) Maximum output/revolving speed The output value at the maximum output shall be written to one place of decimals with the corresponding revolving speed at that time.

- (c) Rated output/revolving speed The output value at the rated output shall be written to one place of decimals with the corresponding revolving speed at that time.

- (d) Maximum torque/revolving speed The maximum torque value shall be written to two places of decimals with the corresponding revolving speed at that time.

- (e) Specific fuel consumption The specific fuel consumption at the rated output shall be written to one place of decimals.

(4) Specification of Vehicle Body

- (4.1) Main Clutch** The distinction between the tension clutch type, friction plate type, and the like shall be written.

(4.2) Speed Change Device

- (a) Belt The distinction between the belt shifting system, stepless belt speed change system, and the like shall be written.

- (b) Others In the case of a gear speed change system, the distinction between the selective gearing type, constant gearing type, synchronous gearing type, etc. shall be written.

- (4.3) Number of Speed Change Steps** The numbers of speed change steps for forward and backward traveling shall be written.

- (4.4) Wheel Axle Revolving Speed/Running Speed
- (a) Wheel axle revolving speed/running speed The wheel axle revolving speed for each speed step at the engine revolving speed at the rated output of the engine shall be written to one place of decimals with the corresponding running speed at that time.
- (b) Remarks The presence or absence of a speed reduction device for the period of handle turning, the speed change limit position, etc. shall be written.
- (4.5) Steering Clutch The distinction between the dog clutch type, planetary gear type, etc. shall be written.
- (4.6) Wheel Axle The position (distance from hitch), shape, and dimensions of the wheel axle shall be shown in a separate diagram and the number of the diagram shall be written in the specification.
- (4.7) Wheels
- (a) The effective diameter of the standard wheels shall be written.
- (b) The kind and nominal size of the standard wheels shall be written.
- (4.8) Braking Device The type of braking device shall be written.
- (4.9) Hitch The shape and dimensions of the main part of the hitch shall be shown in a separate diagram and the number of the diagram shall be written in the specification.
Further, where the shape and dimensions of the main part of the hitch conform to JIS B 9209, the corresponding nominal size shall be written in a separate diagram.
- (4.10) Turning of Handle The practicability or unpracticability of forward and backward turning of the handle shall be written.
- (4.11) Headlights The presence or absence of headlights shall be written.
- (4.12) Power Take-off Shaft
- (a) The position (distance from hitch), shape, and dimensions of the main power take-off shaft and the direction of its revolution viewed from the shaft end shall be shown in a separate diagram and the number of the diagram shall be written in the specification.
- (b) The rated output value of the main power take-off shaft shall be written to one place of decimals with the corresponding revolving speed at that time.
- (5) Specification of Rotary In the case of condition No. 2 for preparation of specification, the following items relating to the rotary shall be written.

- (5.1) Manufacturer's Name The name of the manufacturer of the rotary shall be written.
- (5.2) Designation and Type The designation and type of the rotary shall be written.
- (5.3) Power Transmission Device
 - (a) Power Transmission Path The distinction between the center drive type, side drive type, etc. shall be written.
 - (b) Power Transmission Construction The distinction between the gear transmission type, chain transmission type, shaft transmission type, etc. shall be written.
- (5.4) Plowing Width The outermost width of the plowing claws shall be written.
- (5.5) Number of Attached Plowing Claws The maximum number of attached plowing claws shall be written.
- (5.6) Revolving Direction of Plowing Claw Shaft The revolving direction of the plowing claw shaft shall be written.
 - (a) In a rotary whose plowing claw shaft and wheel axle are parallel, the revolving direction equal to that of the wheel axle during forward travel shall be taken as "normal revolution" and the revolving direction opposite to it shall be taken as "reverse revolution".
 - (b) Where the plowing claw shaft and the wheel axle are not parallel, the revolving direction of the plowing claw shaft shall be written with the visual point for explaining it, appended.
- (5.7) Turning Radius of Plowing Claws The largest turning radius of plowing claws shall be written.
- (5.8) Revolving Speed of Plowing Claw Shaft
 - (a) Revolving speed of plowing claw shaft The revolving speed of the plowing claw shaft for each speed step, at the revolving speed of the engine running with rated output, shall be written.
 - (b) Remarks The presence or absence of a revolution stopping device to act during backward travel, during the lifting of the rotary, etc., and the speed change limit position, and the like shall be written.
- (5.9) Total Width The outermost width of the rotary shall be written.
- (5.10) Wheel Base
 - (a) The horizontal distance from the center of the wheel axle to that of the plowing claw shaft shall be written.

(b) The horizontal distance from the center of the wheel to that of the tail wheel shall be written.

(5.11) Mass The mass of the rotary shall be written.

Attached Table Specifications of Agricultural Walking Tractors

General Specifications

Manufacturer's name				
Designation and type of walking tractor				
Condition for preparation of specification	Condition No. 1		Condition No. 2	
Total length mm			(to)	
Total width mm			(to)	
Total height mm			(to)	
Tread mm	Standard	Max.	Min.	Steps
Ground clearance mm		()	
Handle position mm				
Total mass kg				
Additional weight (position of addition) kg	Standard	Max.	Min.	()

Specifications of Engine

Manufacturer's name	
Designation and type of engine	
Kind of engine	
Number of cycles	
Type of combustion chamber	
Number of cylinders	
Cylinder arrangement	
Valve arrangement	
Ignition system	
Total stroke volume l {cc}	{ }

(Continued)

Cooling system	
Starting system	
Battery	Voltage V
	Capacity Ah
Kind of fuel	
Fuel tank capacity l	
Max. output/revolving speed	
$\text{kW}/\text{min}^{-1}$ {PS/rpm}	
Rated output/revolving speed	/
	/
Max. torque/revolving speed	
$\text{N}\cdot\text{m}/\text{min}^{-1}$ {kgf·m/rpm}	
Specific fuel consumption	
$\text{g}/\text{kW}\cdot\text{h}$ {g/PS·h}	

Specifications of Vehicle Body

Main clutch						
Speed change device	Belt					
	Others					
Number of speed change steps		Advance	Steps	Retreat	Steps	
Wheel axle revolving speed / running speed min^{-1} {rpm}/km/h	Advance	1st speed		/		
		2nd speed		/		
		3rd speed		/		
		4th speed		/		
		5th speed		/		
		6th speed		/		
	Retreat	1st speed		/		
		2nd speed		/		
		3rd speed		/		
		4th speed		/		
Remarks						
Steering clutch						
Wheel axle		The position, shape, and dimensions: as shown in Figure.				
Wheels	Effective diameter mm					
	Kind and designation					
Braking device						
Hitch		Shape and dimensions: as shown in Figure.				
Turning of handle						
Presence or absence of head lamp						

(Continued)

Power take-off shaft	Position, shape, dimensions		The position, shape, and dimensions: as shown in Figure.
	Revolving direction		
	Revolving speed min^{-1} {rpm}	1st speed	
		2nd speed	
		3rd speed	
		4th speed	
Output kW (PS)		{ }	

Specifications of Rotary

Manufacturer's name		
Designation and type of rotary		
Power transmission system	Path	
	Construction	
Plowing width mm		
Number of attached plowing claws		
Revolving direction of plowing claws		
Turning radius of plowing claws mm		
Revolving speed of plowing claw shaft min^{-1} {rpm}	1st speed	
	2nd speed	
	3rd speed	
	4th speed	
	Remarks	
	Total width mm	
Wheel base mm	From center of wheel axle to that of plowing claw shaft	
	From center of wheel to that of tail wheel	
Mass kg		

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